

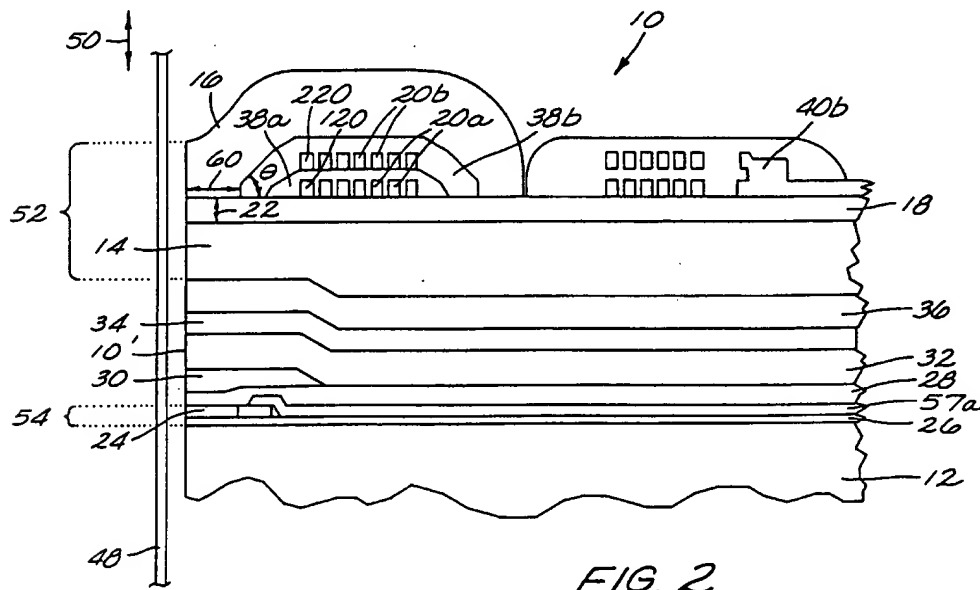
### Remarks

In the final Office Action, Claims 1-8 and 17-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over the newly cited reference, U.S. Patent No. 6,038,106 to Aboaf et al., in view of U.S. Patent No. 6,150,046 to Watanabe.

In the Office Action, the Examiner states the following:

*“Aboaf shows a disk drive write head comprising:  
a bottom pole [14]  
a write gap layer [22] on said bottom pole [14]  
a coil [20a] on said write gap layer [22]  
a photoresist insulation layer [38a] on said coil [20a]  
an insulation shell layer [38b] on the entire insulation layer [38a], said insulation shell layer conforming to the contours of said photoresist insulation layer; and  
a top pole [16] on said insulation shell layer [38b], the top pole having an apex angle substantially defined by the photoresist insulation layer [38a] (Fig. 2).”* (Office Action, page 2)

Reproduced below is Figure 2 of the Aboaf et al. reference.



The Examiner further states in the Office Action:

*“Aboaf does not disclose the insulation shell layer [38b] being formed of a dielectric material having a lower milling rate than a milling rate of the photoresist insulation material [38a].*

*Watanabe teaches  $Al_2O_3$ ,  $SiO_2$ ,  $Si_3N_4$ ,  $Ta_3O_5$ , and  $AlN$  (i.e., dielectric materials) exhibit a low milling rate and excellent electric insulation properties (col. 23, lines 54-58).*

*It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the insulation shell layer of Aboaf with the dielectric as taught by Watanabe.*

*The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the insulation shell layer of Aboaf with dielectrics as taught by Watanabe because they provide excellent insulation properties and protection of the underlying layers (Watanabe; col. 4, lines 22-36 and col. 23, lines 54-58).”*

In contrast to the write head disclosed in the Aboaf et al. reference, reproduced below are Figures 5 and 6 of the present Application. It is noted that compared to Figures 5 and 6 of the Application, in Figure 2 of the Aboaf et al. reference the air bearing surface is shown at the left hand side.

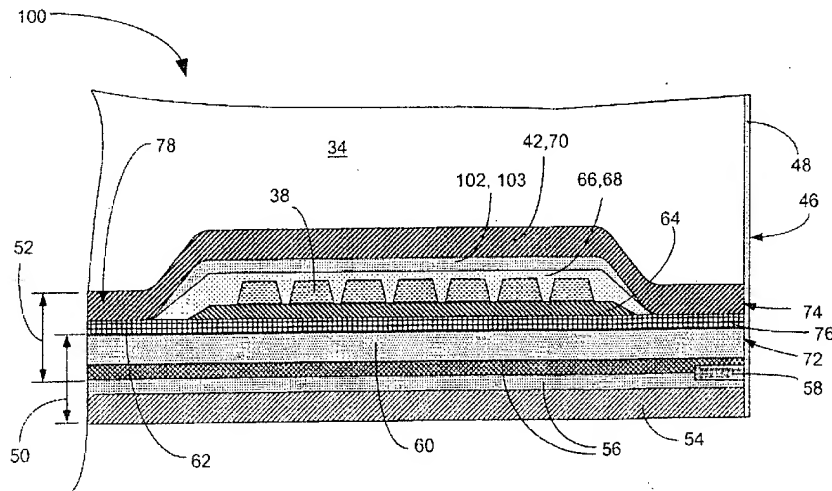


FIGURE 5

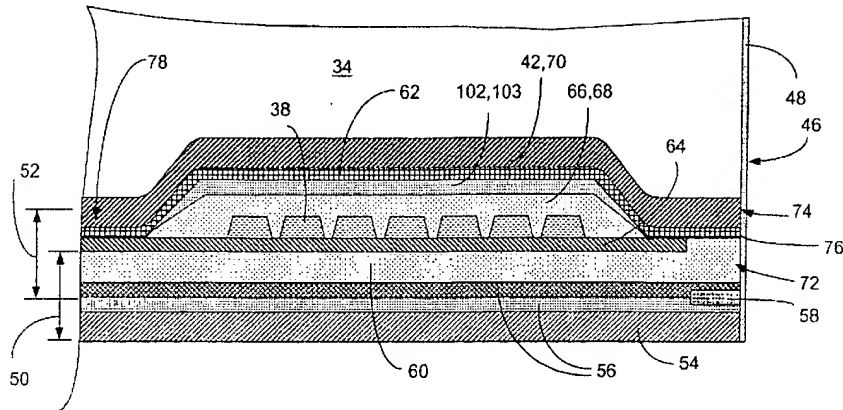


FIGURE 6

As illustrated by both of these embodiments, there is a second insulation layer (I2) 66 which is formed of photoresist 68 (i.e., the recited “photoresist insulation layer”). An insulation shell layer 102 (i.e., the recited “insulation shell layer”) which is formed of a dielectric material 103 is disposed across the entire insulation layer 66 including the sloped portion disposed towards an air bearing surface (ABS) 46 (this is at the right hand side). The insulation shell layer 102 conforms to the contours of the photoresist 68. As such, a top pole or second pole layer (P2) 70 (i.e., the recited “top pole”) is formed upon the resulting insulation shell layer 102 and has an apex angle substantially defined by the underlying second insulation layer (I2) 66.

Applicants respectfully disagree with the Examiner’s forgoing reasoning. The Office Action suggests that in the write head as taught by Aboaf et al. the material identified as “38b” can be substituted for the type of materials disclosed in the Watanabe reference. However, the subject “38b” material is specifically contemplated to be formed of “photoresist.” This is because the material of “38b” is used to surround the “coils 20b.”

As stated in the Aboaf et al. reference itself: “*Electrically insulating material 38 separates the two rows of coil turns 20a, 20b and also provides support for the P2 layer 16 above the coil turns. The conductor turns 20 can be made of an electrically conducting material, such as copper or gold. The electrically insulating material 38 advantageously comprises hardened photoresist.*” (col. 5, line 64 to col. 6, line 3)

Later in the context of discussing the fabrication of the write head, the Aboaf et al. reference refers to such material as a “*first crosslink bake insulator resist 38a*” and a “*second crosslink bake insulator resist 38b.*” (col. 8, lines 44-52) Such material is to be patterned and baked. Thus, the Aboaf et al. reference specifically contemplates that both layers 38a and 38b are made of photoresist.

The suggested substitution of material type as disclosed by Watanabe would not be a suitable substitute. This is because the photoresist is used to surround the coil. There is no teaching or suggestion of utilizing the materials disclosed in the Watanabe reference for such use about the coil turns. In this regard, merely having insulating properties is not the only requirement of such material used at such location in the Aboaf et al. configuration. Moreover, photoresist is an organic polymer. There is no teaching or suggestion that substitution of an inorganic material such as those disclosed in the Watanabe reference would be appropriate.

Finally, another reason why selective substitution of a layer identified as “resist 38b” would not make sense is that this would necessarily mean that the layer “resist 38a” would be a different material type than the newly suggested substitute layer of the layer “38b.” This does not make sense given that both layers 38a and 38b are intended to surround the coils 20a, 20b. Thus, should the substitution be effected as suggested in the

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Office Action, then the coil 20a would be surrounded by photoresist while coil 20b would be surrounded by the inorganic materials disclosed by Watanabe. Such selective mismatching is neither taught nor suggested in any of the cited references.

On the basis of the foregoing, Applicants submit that all the grounds of rejection have been overcome and therefore all of the pending claims, namely Claims 1-8 and 17-19, are in condition for allowance.

Should the Examiner have any suggestions for expediting allowance of the application, the Examiner is invited to contact Applicants' representative at the telephone number listed below. Should any additional fees be due please charge Deposit Account No. 19-4330.

Respectfully submitted,

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